Perspective
Sanitation Systems (/perspective/sanitation-systems-perspective)

Section
Sanitation Technologies (/sanitation-systems/sanitation-technologies)

Factsheet
Jerrycan / Tank

العربية (/ar/sanitation-systems/sanitation-technologies/jerrycan-/-tank)

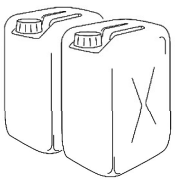
Applicable to
System 4 (/sanitation-systems/sanitation-systems/system-4%3A-waterless-system-with-urine-diversion)
System 5 (/sanitation-systems/sanitation-systems/system-5%3A-biogas-system)
System 9 (/sanitation-systems/sanitation-systems/system-9%3A-sewerage-system-with-urine-diversion)

Application level
- [ ] City
- [x] Household
- [ ] Neighborhood

Management level
- [x] Household
- [x] Public
- [x] Shared

Inputs
Urine | Stored Urine

Outputs
Urine | Stored Urine



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Adapted from

Compendium of Sanitation Systems and Technologies. 2nd Revised Edition (/node/5587)

Executive Summary

Jerrycans are light, plastic containers that are readily available and can be easily carried by one person. When sealed, they can be used to safely store or transport urine.

Advantages

- Jerrycans are widely available and robust

Disadvantages

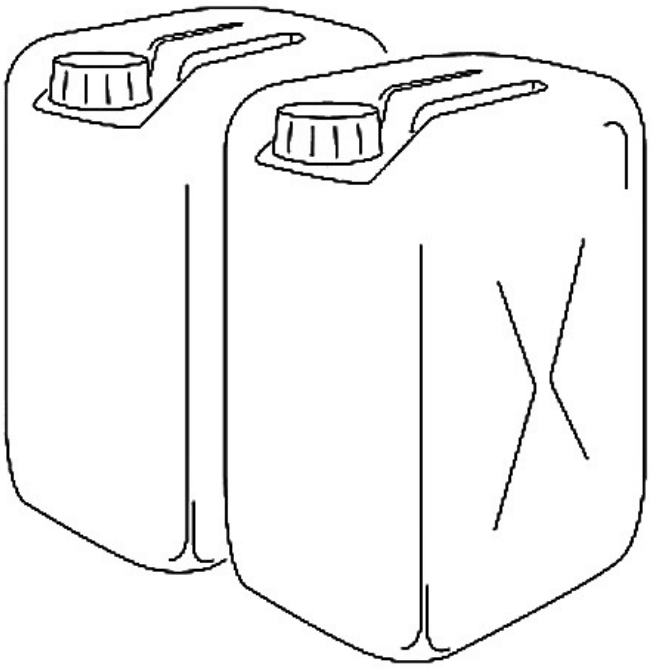
- Heavy to carry

- Very low capital and operating costs
- Potential for local job creation and income generation
- Easy to clean and reusable
- Low risk of pathogen transmission
- Spills may happen
- Mild to strong odour when filling and emptying jerrycans (depending on storage conditions)

In	Out
Urine, Stored Urine	

Introduction

Urine can be collected in jerrycans or they can be filled with the urine stored in **storage tanks (/factsheet/urine-storage-tank-/-container)** for transportation to agricultural fields or to a central storage facility. Where urine-diversion systems are common, a micro-enterprise may specialize in the collection and transport of jerrycans, using e.g., bicycles, donkeys, carts or small trucks.



Schematic of the jerrycan / tank. Source: TILLEY et al. (2014)

Design Considerations

On average, a person generates about 1.2 L of urine a day; however, this quantity may vary significantly depending on climate and fluid consumption. A family of 5 can be expected to fill a 20 L jerrycan with urine in approximately 3 to 4 days. It can either be stored on site or immediately transported.

If the jerrycan is directly connected to the toilet or urinal with a pipe, care should be taken to minimize its length since precipitates will accumulate. Pipes should have a steep slope (> 1%), no sharp angles, and large diameters. They should be easily accessible in case of blockages.

Because jerrycans quickly fill up and need to be frequently exchanged or emptied, the use of a large Storage Tank/Container should be considered for primary collection of the urine. The stored urine can then be filled into jerrycans (e.g., using a small pump) and transported to the fields.

Health Aspects/Acceptance

The people who exchange or empty jerrycans incur low health risks because urine is normally sterile. Carrying jerrycans also poses little health risk as they seal very well. While carrying a jerrycan may not be the most pleasant activity, it is likely to be more convenient and less costly than emptying a pit.

In some locations, urine has an economic value and it may be collected from households for free. Families who invest the time to transport and use their own urine may be rewarded with increased agricultural production, improving their nutrition and/or increasing their income.

Operation & Maintenance

To minimize bacterial growth, sludge accumulation and unpleasant odours, jerrycans should be frequently washed. Because of safety concerns and transportation difficulties, no other liquids (such as blackwater or greywater) should be transported in jerrycans.

Applicability

A well-sealed jerrycan is an effective way of transporting urine over short distances. It is inexpensive, easy to clean and re-useable. This type of transport is only appropriate for areas where the points of generation and use (i.e., homes and fields) are close together, and where relatively small quantities of urine are produced.

Otherwise, a more formalized and efficient collection and distribution system is necessary. For compounds or communities with urine-diverting systems, for example, it may be more appropriate to have a large **urine storage tank (/factsheet/urine-storage-tank-/-container)** that can be emptied by such means as **Motorized Emptying and Transport (/factsheet/motorised-emptying-and-transport)**.

Jerrycans can be used in cold environments (where urine freezes) as long as they are not completely filled. In warmer months the stored urine can be used when it is needed for agriculture.

Library References

Technology Review of Urine Diversion Components

The publication explains the purposes of urine diversion, its benefits and challenges, urine precipitation, urine treatment and reuse in agriculture. Further, it provides an overview on design and operational aspects for equipment needed, such as waterless urinals and urine diversion toilets including supplier information and indicative costs. Overall, it pulls together scattered knowledge around the topic of urine diversion in a concise manner.

MUENCH, E. von WINKER, M. (2011): Technology Review of Urine Diversion Components. Overview of Urine Diversion Components such as Waterless Urinals, Urine Diversion Toilets, Urine Storage and Reuse Systems. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH **URL (https://www.susana.org/en/knowledge-hub/resources-and-publications/library/details/875)** [Accessed: 11.05.2019]

Practical Guidance on the Use of Urine in Crop Production

This practical guideline on the use of urine in agricultural productions gives some background information on basic plant requirements and how they can be met with urine as a liquid fertiliser.

RICHERT, A. GENSCH, R. JOENSSON, H. STENSTROEM, T.A. DAGERSKOG, L. (2010): Practical Guidance on the Use of Urine in Crop Production. (= EcoSanRes Publication Series, Report No. 2010-1). Stockholm: Stockholm Environment Institute (SEI) **URL (http://www.ecosanres.org/pdf_files/ESR2010-1-PracticalGuidanceOnTheUseOfUrineInCropProduction.pdf)** [Accessed: 26.05.2019]

Technology Review of Urine-Diverting Dry Toilets (UDDTs)

This publication offers a complete overview of UDDT functions, design considerations, common operation and maintenance issues and generalised installation costs. Its focus is on applications in developing countries and countries in transition, although UDDTs are also applicable in developed countries.

RIECK, C. MUENCH, E. HOFFMANN, H. (2012): Technology Review of Urine-Diverting Dry Toilets (UDDTs). Overview on Design, Management, Maintenance and Costs. (= Technology Review). Eschborn: German Agency for Technical Cooperation (GTZ) GmbH **URL (https://www.susana.org/en/knowledge-hub/resources-and-publications/library/details/874)** [Accessed: 11.05.2019]

Guidelines for the safe use of wastewater excreta and greywater. Volume IV. Excreta and Greywater Use in Agriculture

Volume IV of the Guidelines for the Safe Use of Wastewater, Excreta and Greywater recognizes the reuse potential of wastewater and excreta (including urine) in agriculture and describes the present state of knowledge as regards potential health risks associated with the reuse as well as measures to manage these health risks following a multi-barrier approach.

WHO (2006): Guidelines for the safe use of wastewater excreta and greywater. Volume IV. Excreta and Greywater Use in Agriculture. Geneva: World Health Organisation (WHO) **URL (https://www.who.int/water_sanitation_health/publications/gsuweg4/en/)** [Accessed: 09.05.2019]

PDF (/sites/default/files/reference_attachments/WHO%202006%20Guidelines%20for%20the%20safe%20use%20of%20wastewater%20excreta%20and%20greywater%